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February 10, 2000

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**Via Hand Delivery**

Magalie Roman Salas, Secretary  
Federal Communications Commission  
445 12th St., S.W., Room TW-B204  
Washington, D.C. 20554

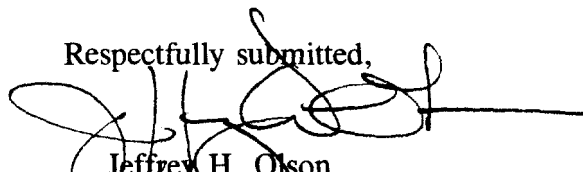
Re: Ex Parte File Nos. 48-SAT-P/LA-97, 89-SAT-AMEND-97,  
130-SAT-AMEND-98, Docket No. ET 98-206, RM No. 9147

Dear Ms. Salas:

On February 9, 2000, Mark MacGann, Vice President; Guy Christiansen, Director of Regulatory Affairs; Helene Fauve, Senior Systems Engineer, all of SkyBridge L.P.; and Diane Gaylor, Esq., and the undersigned met in person with Thomas Sugrue, Diane Cornell, Thomas Stanley, Kathleen Ham, Jennifer Burton, Michael Sozan, Michael Pollak, and Mark Bollinger of the Wireless Telecommunications Bureau for the purpose of discussing issues relating to the above-referenced matters. At the meeting, the enclosed materials were reviewed.

Please contact the undersigned if you have any questions.

Respectfully submitted,

  
Jeffrey H. Olson  
Attorney for SkyBridge L.P.

Enclosure

cc: Thomas Sugrue  
Diane Cornell  
Thomas Stanley  
Kathleen Ham

Jennifer Burton  
Michael Sozan  
Michael Pollak  
Mark Bollinger

01-9



# **IMPACT OF NORTHPOINT OPERATIONS IN THE 12 GHZ BAND**



- **Northpoint's proposal does nothing to address the critical need for advanced telecommunications services in rural areas.**
- **Northpoint's proposed services and technology have no place in the 12 GHz band.**
- **Northpoint's "sharing" proposals would place debilitating burdens on NGSO FSS systems, undermining the business case for such systems.**



***Northpoint's proposal does nothing  
to address the critical need for advanced  
telecommunications services in rural areas.***



- Northpoint's service is essentially *one-way*.
- SkyBridge's *two-way* broadband service can provide every application the Northpoint service can provide, plus services requiring full, two-way interactivity:
  - videoconferencing
  - telelearning, telemedicine
  - local infrastructure for telephony, wireless local loops, and mobile communications

- **Like other terrestrial services, Northpoint's technology is ill-suited to the rural environment.**
  - Northpoint service requires transmitters spaced as closely as 10 km apart.
  - Northpoint requires up to 1000 transmitters to serve the same area as a SkyBridge beam.



- The very *purpose* of broadband satellite services such as SkyBridge is to reach rural areas.
  - Once launched, the satellites can ***immediately*** serve a farmhouse for the ***same cost*** as a townhouse.
  - It is in rural areas that the competitive advantage over fiber and wireless solutions becomes most important.
  - Rural markets are therefore critical to SkyBridge's business plan.



- **For example, SkyBridge could radically transform telecom services on tribal lands.**
  - New services could be accessed directly from SkyBridge user terminals in schools and community centers.
  - SkyBridge user terminals can be used to create infrastructure for other telecom applications (e.g., telephony), by the tribes themselves.





- **SkyBridge will accept a national coverage requirement as a condition of its license, for both space and ground segments.**
  - This goes beyond what was proposed in the Commission's NPRM.



- **SkyBridge will have the capability to honor such a commitment early in the deployment process.**
  - SkyBridge's "relay links" will allow it to serve cells not yet served by a gateway.
  - With the infrastructure in place, every incentive will exist to market heavily to rural areas.



- **SkyBridge would therefore support a Commission rule requiring national service availability (coverage by satellites and gateways) by 12 months from the start of commercial service.**
  - No terrestrial operator could ever make or honor such a commitment.



## USE OF THE 12 GHz BAND

---

***Northpoint's proposed services and technology  
have no place in the 12 GHz band.***

- **A variety of other bands have already been allocated for Northpoint-type services**
  - LMDS (28 GHz, 38 GHz)
  - MMDS (2.5 GHz)
  - DEMS (24 GHz)
  - 700 MHz to be auctioned this summer
- These would all offer the ability to provide local channels, as well as true two-way interactivity.



- **Northpoint cannot provide local-into-local service that is truly integrated with DBS service.**
  - This eliminates Northpoint's original rationale for operating in the band.
  - Even if Northpoint's service provides local channels, this is a very small part of its spectrum use (10-20 MHz at most out of 500 MHz).



- **Northpoint will gain no commercial advantage by operating in the 12 GHz band.**
  - Consumer equipment exists at other bands, and is already used by wireless cable providers (including Northpoint principals).
  - Northpoint will not be able to “piggyback” off the existing DBS reception equipment on the market.
  - No transmission equipment exists at 12 GHz.



- **There is no technical reason why Northpoint could not operate in one of the allocated bands.**
  - These bands are licensed on a geographic basis to a single licensee; Northpoint would not have to share with other users.
  - Northpoint could operate omnidirectional transmitters, at whatever power level it wants, reducing the cost of its service.



- **Northpoint has failed to demonstrate that it can share with the primary users of the band.**
  - SkyBridge has been required to demonstrate the compatibility of its system to the satisfaction of the DBS community.
  - After three years of rigorous study, SkyBridge has reached consensus with DBS providers.
  - Northpoint must be held to the same technical standard.



- **Northpoint is not entitled to expedited treatment under the SHVA.**
  - The SHVA provision is intended for services “delivering local broadcast television to satellite television subscribers in unserved and underserved local television markets.” Northpoint will not achieve this goal.
  - The SHVA provision requires a finding that the proposed service does not cause harmful interference to primary services. The legislative history makes it clear that this includes not only DBS operations, but future NGSO FSS operations as well. Northpoint admits that it will cause harmful interference to NGSO services, and the record clearly support’s the DBS industry’s claim of interference.



***Northpoint's "sharing" proposals would place debilitating burdens on NGSO FSS systems, undermining the business case for such systems.***

## ***Constellation design drivers:***

- ✓ to have at least one satellite available above 10° elevation and out of the GSO arc avoidance for 100% of the time
- ✓ to minimize the number of satellites

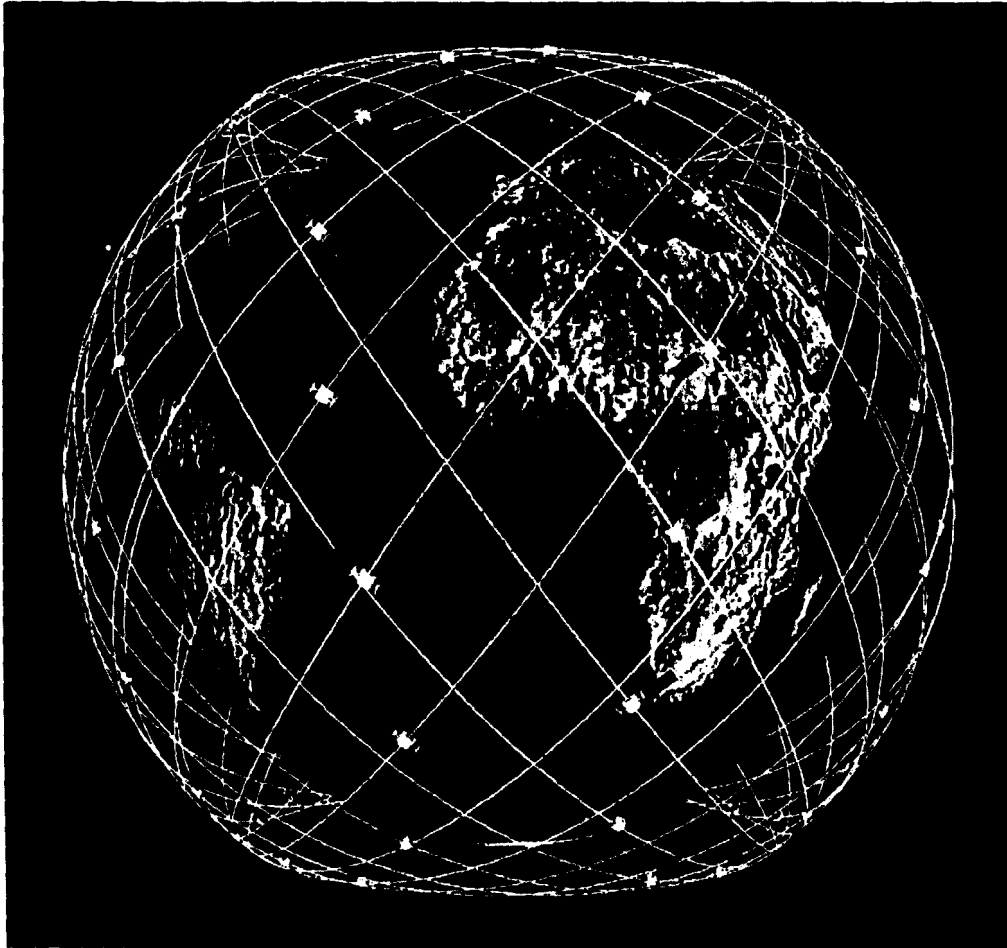
## ***Payload/antenna design drivers:***

- ✓ the antenna forms the beam pointing from nadir to 10° elevation
- ✓ optimisation of the sidelobes of the antenna to protect both terrestrial and GSO systems
- ✓ offer enough antenna resources to permit full coverage



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# SkyBridge tailored Space Segment



## *Circular Orbits*

*20 planes*

*4 sat. per plane*

*1469 km altitude*

*53 deg. Inclination*

*67.5 deg. Phasing*

*Maximum 24 beams per  
satellite*

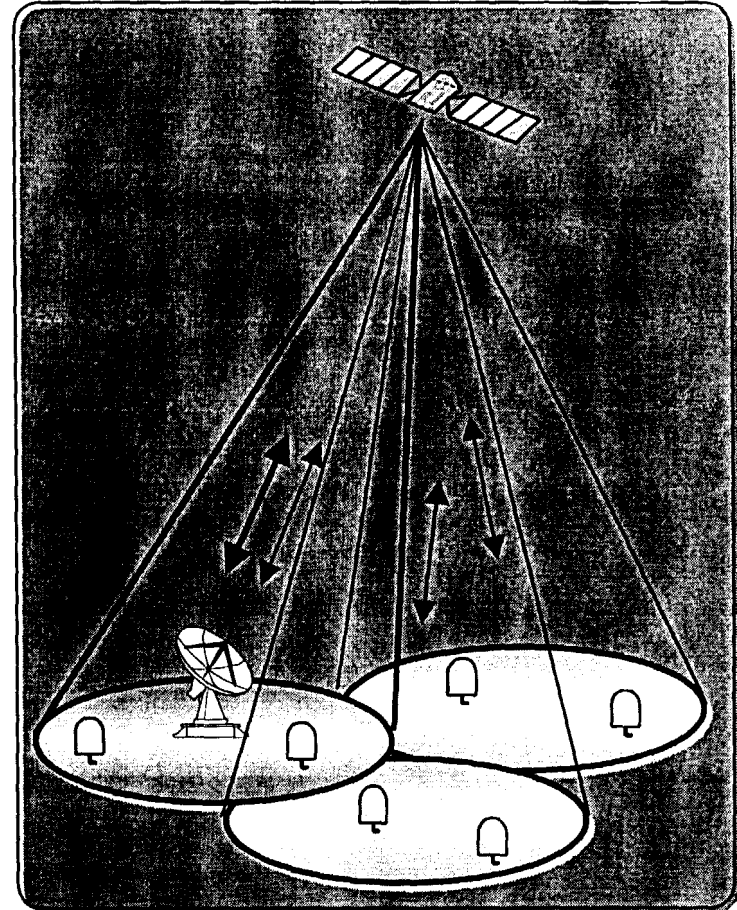
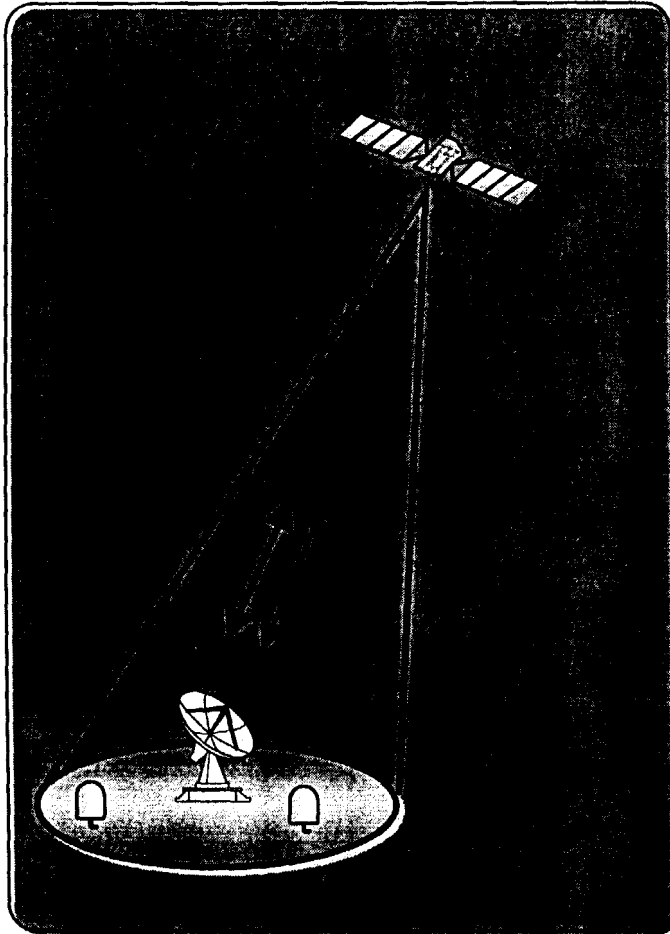
*not all satellites visible  
from a cell can serve the  
cell*



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# SkyBridge links: tailored to traffic demand

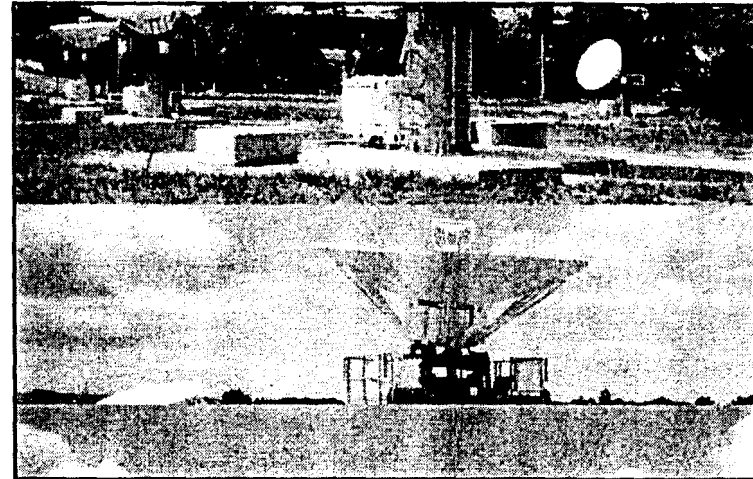
Two types of links: gateway cell link, relay links



# SkyBridge ground segment

## ✓ Gateway

- ◆ 3 to 6 antennas
- ◆ 2.5m or 4.5 m antennas diameter



## ✓ Manage real-time access to the Space Segment

- ◆ According to long term Space Segment resource assignment: frequencies and satellites to be used by a gateway at each time, according to the cell traffic demand

## SkyBridge service capabilities

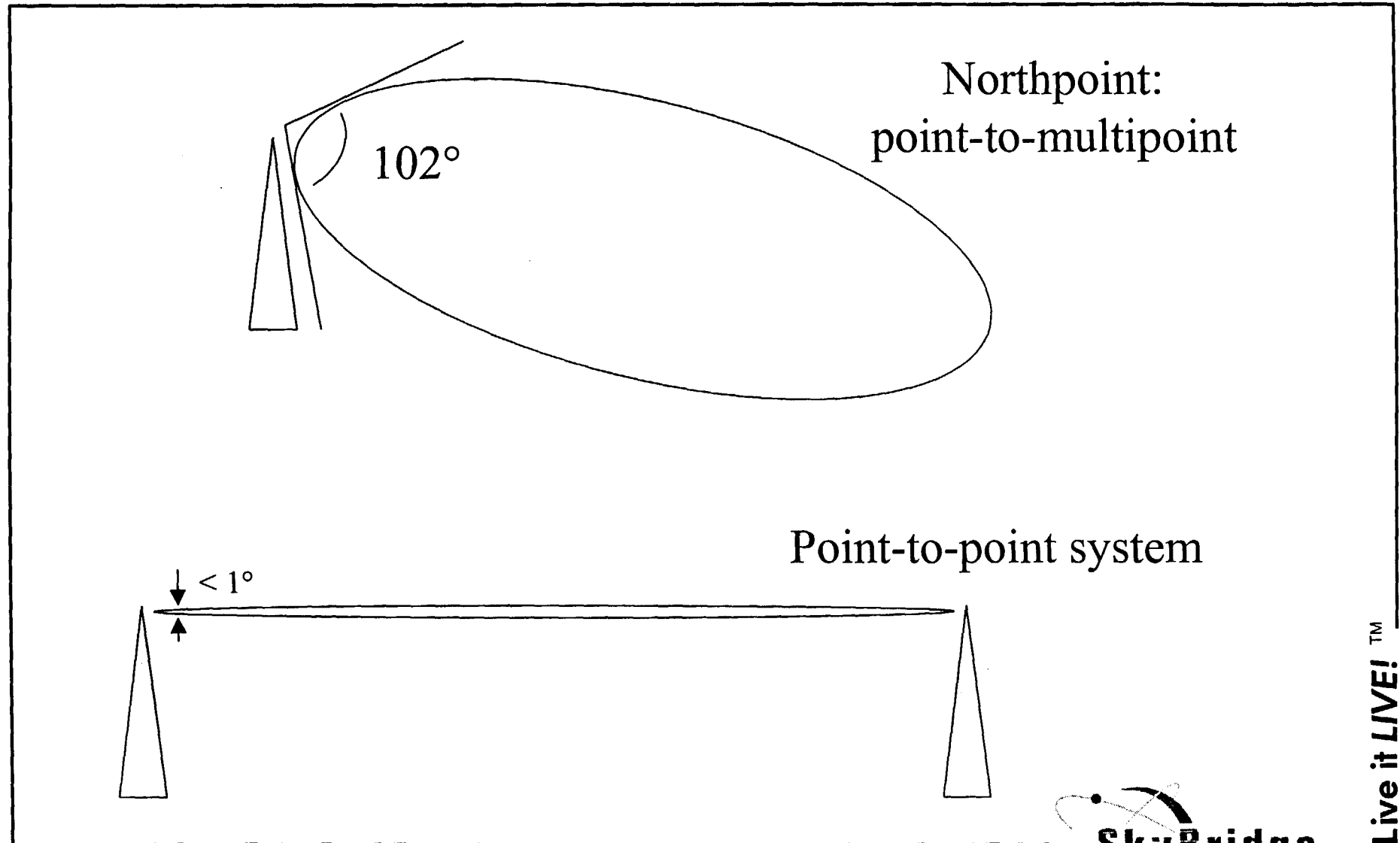
- ✓ ***SkyBridge provides the same capacity per user in all cells***
- ✓ ***SkyBridge covers all rural and urban areas from opening of service => true universal access***
- ✓ ***In low traffic areas, less frequencies are needed to offer the same capacity to users***
  - fewer transponders used
  - optimisation of the resource allocation to minimize intra-system interference
    - frequency diversity outside the 12.2-12.7 GHz band will not be always available



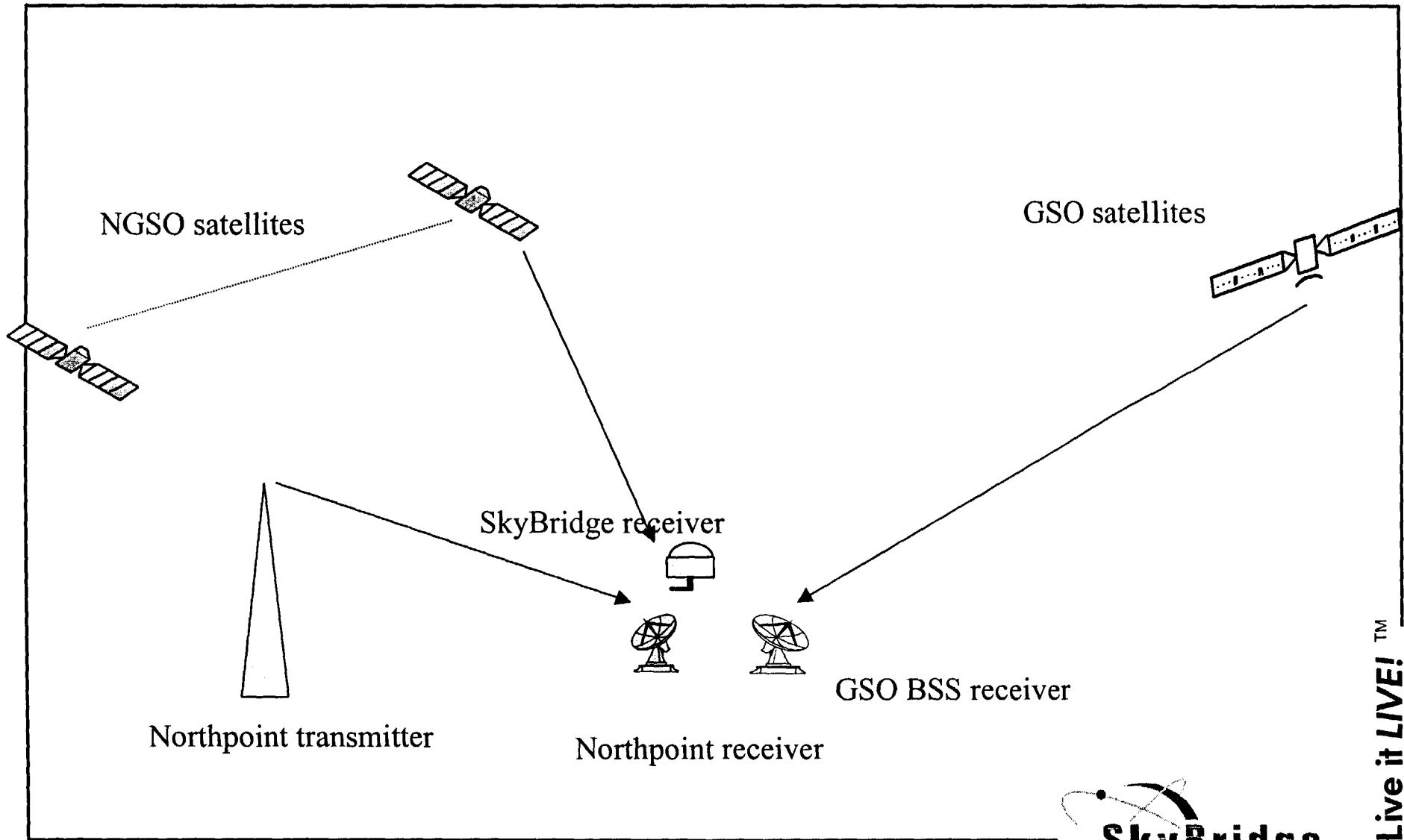
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# Northpoint/NGS O sharing scenario: description



# Northpoint/ NGS O sharing scenario: description



## SkyBridge use of frequencies

***To ensure sharing with terrestrial fixed point to point services, the use of the band 10.7-11.7 GHz is restricted to SkyBridge gateways***

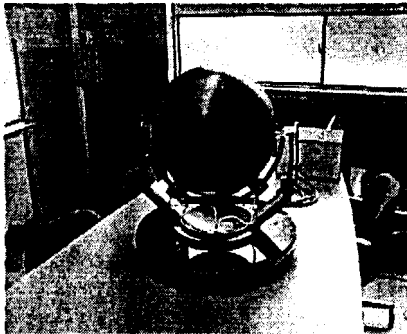
**✓ *SkyBridge User terminals must be deployed throughout the band 11.7-12.7 GHz***

- residential terminals

small terminals: limited antenna discrimination

- professional terminals

bigger terminals: better antenna discrimination



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## Impact of Northpoint on SkyBridge

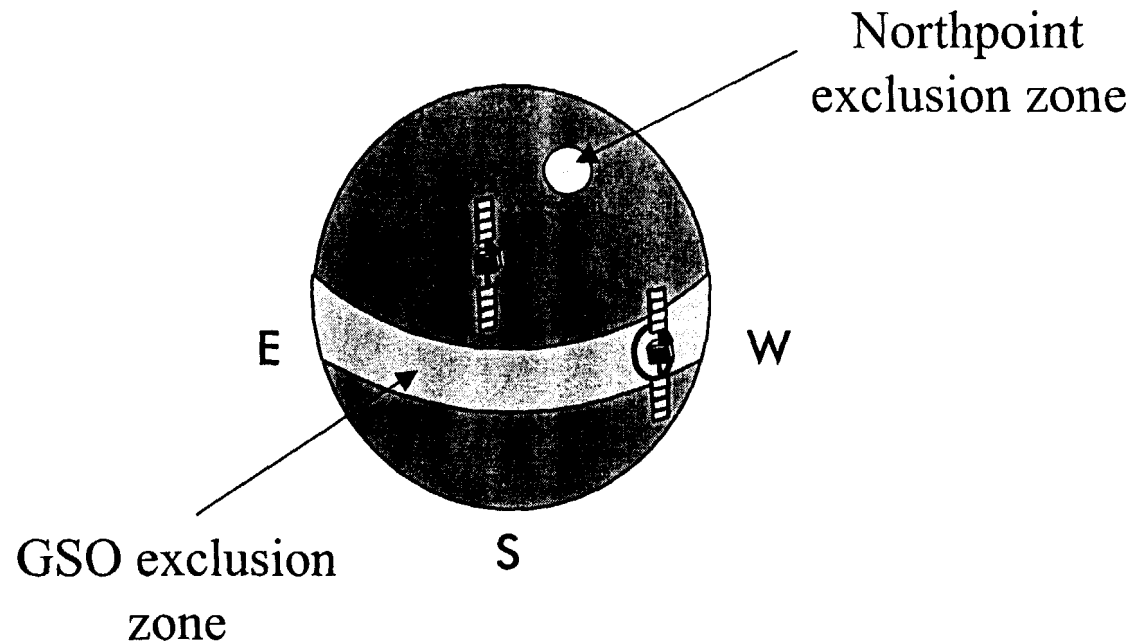
***If Northpoint transmitters operate in the 12.2-12.7 GHz band,***

- substantial degradation of the G/T of the SkyBridge receiver***
- there will be a significant exclusion zone for SkyBridge user terminals operating co-frequency around each Northpoint transmitter to be located in each SkyBridge cell***
  - area within which the user terminal sees the transmitter in its operating sky (above the minimum operating angle)
  - area within which interference is too high



## Constraint on SkyBridge

***Constraint to take into account in the link design for one earth point within a SkyBridge cell***



***The constraints of all earth points within the cell have to be taken into account in the resource allocation***

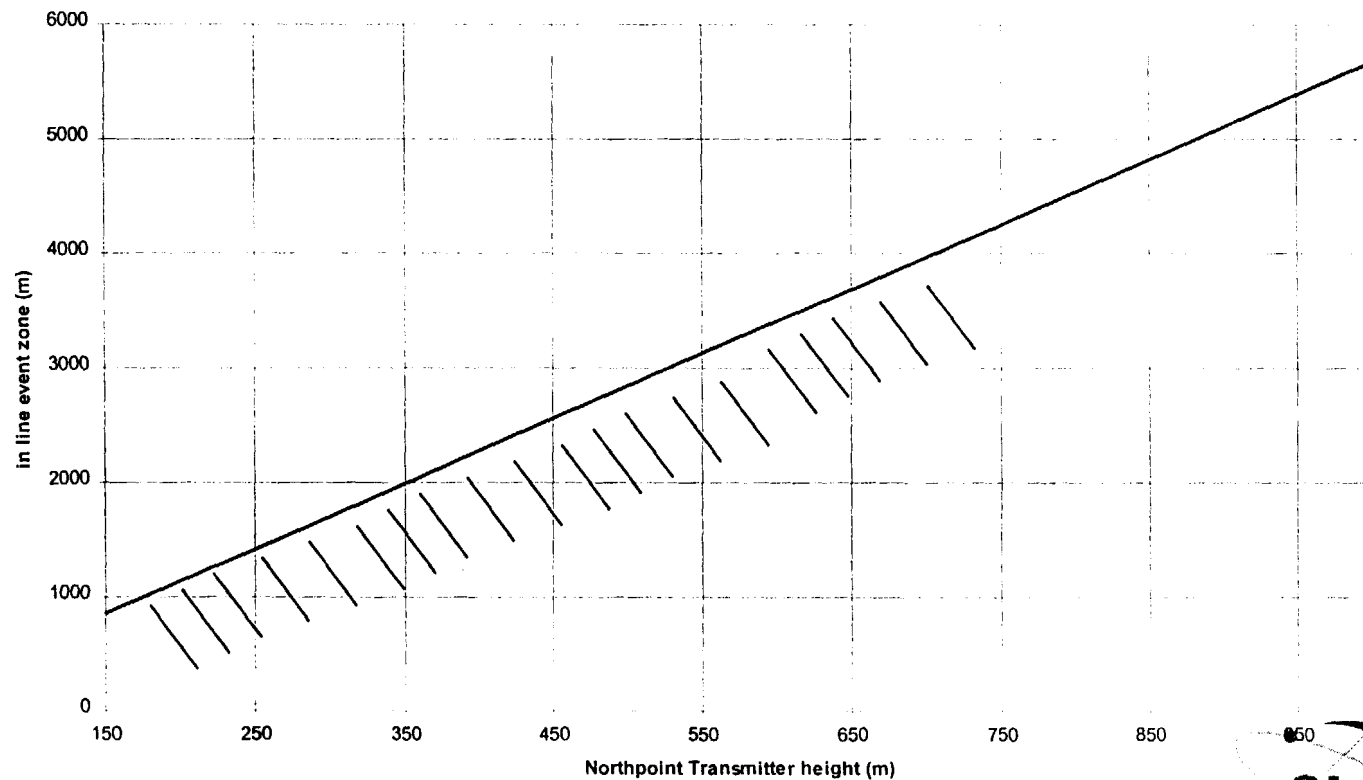


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## Geometrical constraint

***Minimum distance from the Northpoint transmitter to avoid SkyBridge user terminals, Northpoint transmitter and SkyBridge satellite alignment***

In line event zone



## Impact of Northpoint

***Northpoint power level at edge of coverage : -156 dBW/24 MHz***

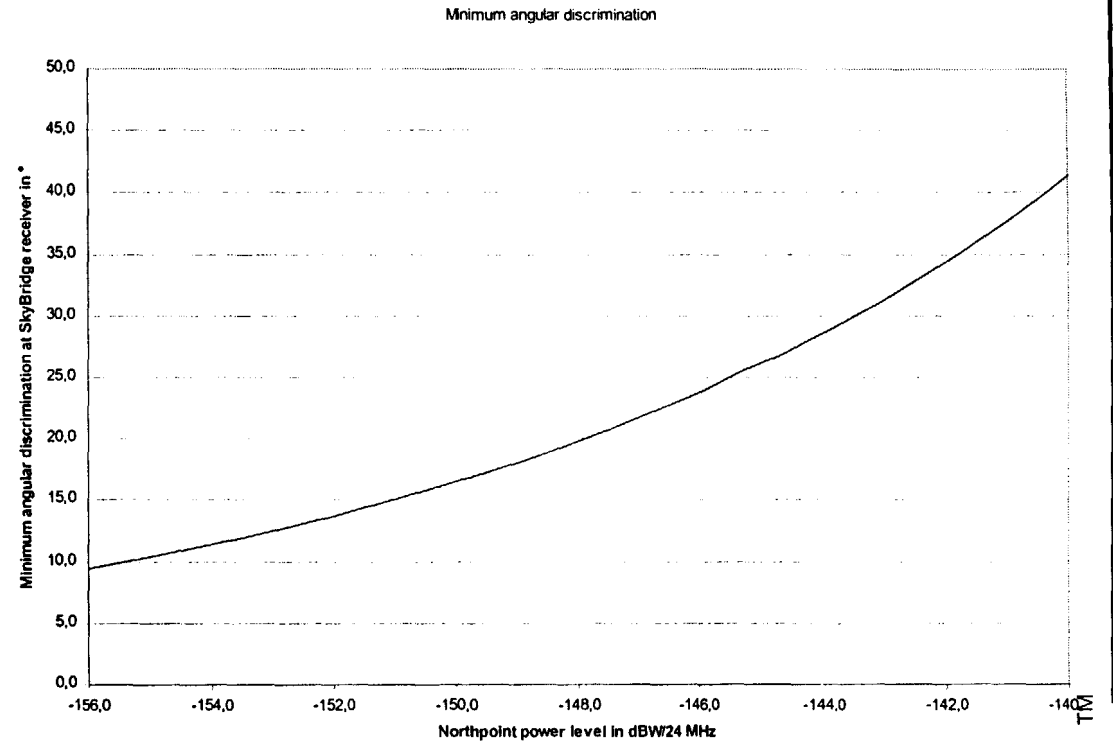
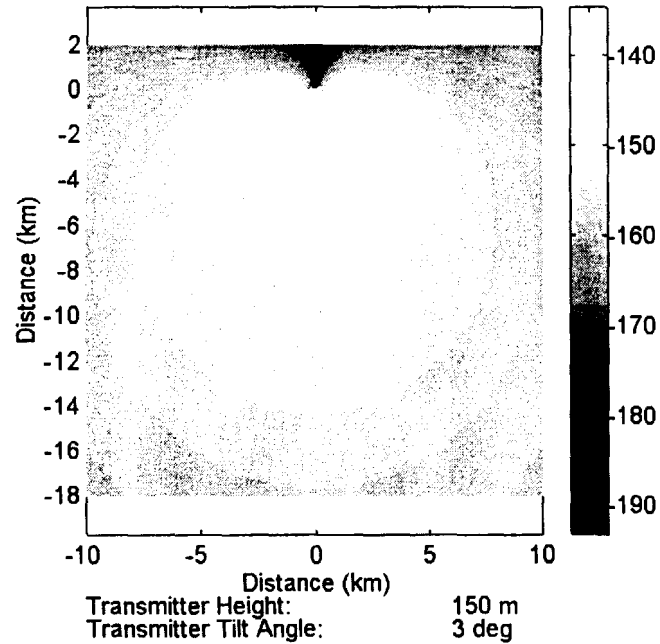
***Corresponding PFD: -150.4 dBW/m<sup>2</sup>/4kHz***

***Max. PFD to ensure a I/N of -12.2 dB: -169.6 dBW/m<sup>2</sup>/4kHz***

***Need of a minimum angular discrimination at the residential user terminal***



# Geometrical constraint



**$EIRP = 12.5 \text{ dBm}$**



## Northpoint Transmitter density

- *typical Northpoint service area: 150 miles<sup>2</sup>*
- *SkyBridge cell area: 148,653 miles<sup>2</sup>*

⇒ 991 transmitters per SkyBridge Cell



## Northpoint open points

- ***Range of height of Northpoint transmitters:***

- elevation of the transmitter is  $0.5^\circ$  at 16 km for a height of 150 m. => availability of Northpoint?

- ***Range of EIRP : 12.5dBm - 45 dBm***

- what is the maximum power at the SkyBridge receiver?

- ***Deployment scenario :***

- up to 3 transmitters available per Northpoint customer  
=> impact on the sharing and exclusion zone?
- terrain constraints prevent regular installation every 16 km  
=> impact on power and number of transmitters?



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## Conclusion

***SkyBridge has spent 3 years of technical debates to rigorously prove its ability to share with other services and define appropriate rules :***

***A Northpoint transmitter will degrade the SkyBridge link budget***

***A Northpoint transmitter will create exclusion zones for the satellite user terminals***

***All the variables in the Northpoint parameters prevent a rigorous technical analysis***



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